

On page three of the statement of the rejection, the Examiner identified column 9, lines 26-50 as teaching the last clause in independent claim 1. This clause is reproduced below:

wherein the movement of the laser and the substrate relative to one another is continuous between and during the steps of activating the portion of the source/drain regions and activating the other portion of the source/drain regions.

For ease of analysis, Applicants have reproduced column 9, lines 26-50 below:

In a case where TFTs are formed with crystalline silicon film, when an impurity ion for providing one conductivity type, such as phosphorus or boron, is doped into source and drain regions by ion doping or plasma doping in a self-alignment using a gate electrode as a mask, the doped regions become amorphous or crystallinity thereof is remarkably reduced due to impact of an accelerated ion. Thus, an annealing process for restoring crystallinity of the source and drain regions is required. The doped impurity ion do not act as an impurity for controlling the conductivity type when no treatment is performed. Thus, annealing for activating the impurity ion is required.

The annealing process for the above purpose is conducted by irradiation of laser light. TFTs are formed with the crystalline silicon film, by the arrangement as shown in FIG. 5, according to the Embodiment 1 or 2. After the impurity ion is implanted into the source and drain regions of the TFTs, the linear laser light in FIG. 5 is irradiated. In this case, since the source and drain regions are disposed in the line direction of the linear laser, the anneal effect can be made uniform in one TFT. Also, since the direction along which the TFTs are arranged and the line direction of the linear laser light are coincident with each other, the anneal effect on each TFT can be made uniform.

Initially, Applicants note that as with the Office Action dated July 26, 2002, the Examiner's rejection has again failed to comport to the provisions of 37 C.F.R. § 1.104(c).¹ In particular, the Examiner neither clearly designated the teachings in the references being relied upon by the Examiner nor clearly explained the pertinence of the applied prior art. Claim 1 specifically recites "the movement ... is continuous between and during the steps of activating." However, column 9, lines 26-50 of Yamazaki makes no mention of continuous movement between and during the steps of activating. As the citation in Yamazaki that was alleged by the Examiner to disclose the claimed limitation does not disclose the claimed limitation, and the Examiner has

¹ 37 C.F.R. § 1.104(c) provides:

In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.

not clearly explained what in this citation discloses the claimed limitation, Applicants can only conclude that the Examiner has failed to establish that Yamazaki identically discloses the invention, as recited in claim 1, within the meaning 35 U.S.C. § 102.

As to claim 3, the Examiner asserted that column 7, lines 1-63 of Yamazaki discloses the claimed limitation of:

wherein each portion of the source/drain regions receives more than one single pulse of energy from the laser.

Applicants again note that the Examiner has not clearly identified the portion of the reference being relied upon. The Examiner has cited 63 lines of text (an entire column) to disclose a limitation that was recited in just 18 words. Applicants are not in a position to guess as to exactly what in column 7 of Yamazaki the Examiner believes teaches the claimed limitation. As such, it is incumbent on the Examiner to clearly explain why the Examiner believes the reference discloses the limitations recited in claim 3. Notwithstanding, it is not apparent that Yamazaki teaches or suggests the limitation recited in claim 3.

As to claim 8, the Examiner asserts that Yamazaki identically disclose the limitations recited therein. However, claim 8 depends upon claim 6, and the Examiner has not asserted that Yamazaki identically discloses the limitation in claim 6. As such, the Examiner's rejections as to claims 6 and 8 are inconsistent. Furthermore, as discussed above with regard to claim 3, the Examiner has not clearly identified the portion of the reference being relied upon, and it is not apparent that Yamazaki teaches or suggests the limitation recited therein, as the Examiner only generally referred to column 7 of Yamazaki.

Claims 4, 9 and 12 recite that each pulse from the laser respectively irradiates non-identical portions of the source/drain regions. Initially, Applicants note that the Examiner has not construed a meaning for the term "non-identical portions." As such, Applicants cannot evaluate the Examiner's assertion that this feature is disclosed in Yamazaki. Furthermore, the Examiner has not clearly identified the portion of the reference being relied upon, and it is not apparent that Yamazaki teaches or suggests this limitation.

As to claim 10, the Examiner asserts that Yamazaki teaches that the laser and substrate move relative to one another at a constant velocity, but again, the Examiner has failed to clearly identify the portion in Yamazaki being relied upon. Although the Examiner subsequently identified column 6, lines 3-45 as disclosing this feature with regard to claim 14, it is not apparent that the claimed limitation can be found in this citation.

With regard to independent claim 11, the Examiner again asserts that Yamazaki teaches all the features without specifically identifying where these features are disclosed in the cited reference. The Examiner is reminded that the initial burden is upon the Examiner to establish that the prior art identically discloses the claimed invention within the meaning of 35 U.S.C. § 102. Only after the Examiner has identified elements in a particular reference that correspond to the claimed elements are Applicants required to explain why the reference does not identically describe the claimed invention. By failing to clearly identify those portions in Yamazaki being relied upon for the rejection, the Examiner has improperly placed the initial burden of establishing patentability on Applicants. Applicants, therefore, respectfully submit that the

imposed rejection of claims 1, 3-4, 8-12 and 14 under 35 U.S.C. § 102 for lack of novelty as evidenced by Yamazaki is not factually viable and, hence, solicit withdrawal thereof.

Claims 2, 5-7 and 13 are rejected under 35 U.S.C. § 103 for obviousness based upon Yamazaki in view of the Admitted Prior Art

In the twelfth enumerated paragraph of the statement of the rejection, the Examiner asserted that one having ordinary skill in the art would have been motivated to modify Yamazaki in view of the Admitted Prior Art to arrive at the claimed invention. This rejection is respectfully traversed.

Claims 2 and 7 depend ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 102 for lack of novelty as evidenced by Yamazaki. Specifically, Yamazaki neither discloses nor suggests the movement of the laser and the substrate relative to one another is continuous between and during the steps of activating the portion of the source/drain regions and activating the other portion of the source/drain regions. Fig. 2A (Admitted Prior Art) of Applicants' disclosure also does not disclose this limitation. Accordingly, the proposed combination of references would not yield the claimed invention. Applicants, therefore, respectfully submit that the imposed rejection of claims 2 and 7 under 35 U.S.C. § 103 for obviousness based upon Yamazaki in view of the Prior Art is not viable and, hence, solicit withdrawal thereof.

As to claims 5-6 and 13, the Examiner asserted:

it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved.

With regard to the claimed spot area in claims 5-6 and 13, the Examiner cited In re Aller², among other cases, and applied the oft-used argument that limitations as to shape, size, dimension, thickness, etc. would be obvious as a matter of design choice or routine experimentation. In this regard, the Examiner is referred to M.P.E.P. § 2144.05 II(B), which is entitled "*Only Result-Effective Variables Can Be Optimized.*" As recognized by the courts, prior to asserting that the claimed limitation as to spot area would have been obvious, the Examiner must first establish that this parameter is an (a) art-recognized, (b) result-effective, (c) variable.³ As (c) implies, the limitation must be variable. As such, the disclosure of a value or range does not establish that the term is variable. There must be some teaching that the limitation can vary from the taught value or range. Pertaining to (b), the Examiner must establish that the prior art gives one having ordinary skill in the art a reason to optimize this variable (i.e., varying the limitation in one direction or another produces an expected desirable result). In this regard, the Examiner must go beyond establishing that varying the limitation produces some random result. A random result is not enough; instead, the result must be recognized by the prior art as desirable.⁴ With regard to part (a), the parameter to be optimized being result-effective and variable must be recognized by the art. The Examiner, however, has failed to establish that the claimed spot area of a laser is an art-recognized, result-effective, variable during laser thermal annealing of a semiconductor device. Thus, the Examiner cannot

² 220 F.2d 454, 105 USPQ 233 (CCPA 1955).

³ See, In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); In re Yates, 663 F.2d 1054, 211 USPQ 1149 (CCPA 1981); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

⁴ See In re Boesch, 205 USPQ 215 (CCPA 1980). The claim at issue was directed to a nickel-based alloy having multiple constituents with various ranges and also required that the constituents satisfy an equation as to N_V . The primary reference disclosed an alloy having constituents that overlapped the claimed ranges, but the equation as to N_V was not disclosed. The Court, however, relied upon a secondary reference that suggested: "[t]he higher the N_V of a given Co-Cr-Ni alloy the higher the change for the precipitation of embrittling phases." Therefore, the Court reasoned that the secondary reference taught that N_V could be varied and that varying N_V in a particular direction produced a desired result and, thus, N_V was a known result-effective variable.

assert that optimizing this parameter would have been obvious to one having ordinary skill in the art.

The Examiner's citation of In re Woodruff⁵ is also misplaced. The Examiner appears to be under the mistaken belief that for patentability to be based upon a particular chosen dimension, Applicants must first show that this chosen dimension is critical. In this regard, the Examiner is referred to M.P.E.P. § 2144.05 III, which is entitled "REBUTTAL OF PRIMA FACIE CASE OF OBVIOUSNESS."⁶ As indicated therein, Applicants can rebut a prima facie case of obviousness by asserting critical or unexpected results.⁷ However, the Examiner has failed to establish a prima facie case of obviousness.⁸ Thus, Applicants are not required to assert critical or unexpected results, as there is no case of obviousness to overcome. Applicants, therefore, respectfully submit that the imposed rejection of claims 5-6 and 13 under 35 U.S.C. § 103 for obviousness based upon Yamazaki in view of the Admitted Prior Art is not viable and, hence, solicit withdrawal thereof.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the

⁵ 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1986).

⁶ M.P.E.P. § 2144.05 III provides:

Applicants can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

⁷ Other methods of overcoming a prima facie case of obviousness are, of course, available to Applicants.

⁸ The Examiner has failed to establish that spot area of a laser is an art-recognized, result-effective, variable when laser thermal annealing a semiconductor device. Thus, optimizing this parameter would not have been obvious.

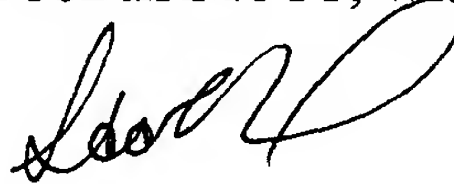
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prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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